Title (en)

GALLIUM PHOSPHIDE LUMINESCENT DEVICE

Title (de)

GALIUMPHOSPHID-LUMINESZENSBAUELEMENT

Title (fr)

DISPOSITIF LUMINESCENT AU PHOSPHURE DE GALLIUM

Publication

EP 1156534 A4 20060906 (EN)

Application

EP 00970122 A 20001027

Priority

- JP 0007530 W 20001027
- JP 30993999 A 19991029

Abstract (en)

[origin: EP1156534A1] By providing a nitrogen-doped low carrier concentration layer 13 having both of a donor concentration and an acceptor concentration controlled below 1 x 10<16>/cm<3> at a p-n junction portion between an n-type GaP layer 12 and a p-type GaP layer 14, the luminance of the GaP light emitting device can be improved by as much as 20 to 30% over the conventional one. Suppressing the donor concentration and the acceptor concentration in the low carrier concentration layer 13 below 1 x 10<16>/cm<3> inevitably gives a carrier concentration, which is expressed as a difference between both concentrations, lower than 1 x 10<16>/cm<3> accordingly. The emission efficiency upon injection of electrons or holes can be improved by suppressing the concentration of the donor which serves as non-emissive center below 1 x 10<16>/cm<3> to thereby extend the carrier lifetime; and by concomitantly suppressing the carrier concentration at a level significantly lower than that in the adjacent layers 12 and 14. <IMAGE>

IPC 1-7

H01L 33/00; H01L 21/208

IPC 8 full level

H01L 33/30 (2010.01)

CPC (source: EP US)

H10H 20/8215 (2025.01 - EP US); H10H 20/824 (2025.01 - EP US); Y10S 438/918 (2013.01 - EP US)

Citation (search report)

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- [A] PATENT ABSTRACTS OF JAPAN vol. 017, no. 050 (E - 1314) 29 January 1993 (1993-01-29)
- See also references of WO 0133642A1

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